

The role of retroperitoneoscopy in the management of simple renal cysts

Management of simple renal cysts

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Abstract

Aim: In this study, we aimed to show that all the Bosniak Type 1 cysts with any localization, size, number or previous surgery can be managed with retroperitoneoscopic decortication in our clinic. **Materials and Methods:** We incorporated in the study 35 patients that had symptomatic type 1 renal cysts and were treated with retroperitoneoscopic decortication in our clinic between July 2012 and January 2014. A comparative analysis of cyst laterality, localization, and size, operation time, previous surgery was performed. Retroperitoneal space was created by balloon dilator. After an 11-mm optic trocar was inserted, a 10-mm port (dominant hand) and a 5-mm port were inserted under direct vision to become an equilateral triangle. **Results:** Mean cyst diameter was 84.2 ± 17.2 mm (56-132 mm). Twenty (57.14%) cases had right, 15 (42.86%) cases had left renal cyst. The mean operation time was 40.1 ± 11.5 minutes. Four (11.4%) patients had previous surgery, 3 (8.5%) patients had percutaneous aspiration with sclerotherapy before. The mean operative time was 36.6 ± 8.3 minutes for primary cases, 54.2 ± 12 minutes for secondary cases and it was statistically longer ($p: 0.002$). **Discussion:** Retroperitoneoscopic renal cyst decortication is a safe and fast procedure with the increasing use of laparoscopy. Previous surgery was the factor for longer operation time in our study.

Keywords

Renal Cysts; Retroperitoneoscopy; Bosniak Type; Decortication

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Introduction

Simple non-hereditary renal cysts are rarely seen before the second decade and its incidence increases with aging. Renal cyst growth occurs in one-third of population in the sixth decade [1]. Renal cysts are mostly simple and asymptomatic. Simple cysts are generally less than one cm and can have an increase in their volume only in 25% of the cases [2]. They have thin and smooth walls and do not contain debris and septa [3]. If an abnormal finding is detected in a renal cyst with ultrasonography (US), then computerized tomography (CT) should be done to evaluate the malignancy potential according to the Bosniak classification [4]. Simple renal cysts are mostly benign masses and do not require treatment unless they cause pain, hematuria, hydronephrosis, urinary system infection or obstruction [5].

There are a few surgical techniques e.g. percutaneous aspiration with/without sclerotherapy, open/laparoscopic (trans-/retroperitoneal) surgery when treatment is indicated in simple renal cysts [6]. Simple cyst aspiration with/without sclerotherapy is minimally invasive therapy for renal cysts. Simple cyst aspiration is rarely curative and has a 40-78% recurrence rate [7]. It has a 32-100% recurrence rate when it is done with sclerotherapy. Some authors showed that laparoscopic surgery and percutaneous aspiration with/without sclerotherapy had similar efficiency and safety in the treatment of medium size renal cysts but laparoscopic surgery had better effects in large and multiple renal cysts [8]. In addition, surgery can be a choice when percutaneous attempt is unsuccessful for renal cysts.

Surgical therapy has a high success rate (95-100%) in renal cysts. Laparoscopic surgery for renal cysts has been very popular due to fast recovery and cosmetic results. In this study, we aimed to show that all the Bosniak Type 1 cysts with any localization, size, number or previous surgery can be managed with retroperitoneoscopic decortication in our clinic.

Material and Methods

We incorporated in this retrospective study 35 patients that had symptomatic type 1 renal cysts and were treated with retroperitoneoscopic decortication in our clinic between July 2012 and January 2014. Demographic features, medical history and physical examination of the cases were collected. In each case, urine and culture analyses, complete blood count and analysis of creatinine levels were performed. Cystoscopy, urinary system imaging, and urine cytology were performed for evaluation of microscopic hematuria to exclude malignancy. Renal cysts were evaluated with ultrasonography and contrast-enhanced CT. Cyst sizes were measured with CT. Informed consent was obtained from each study subject. We included only Bosniak Type 1 cases in this study. A comparative analysis of cyst laterality, localization, and size, operation time, previous surgery was performed.

Surgical Technique

In the beginning, the patient was placed in the decubitus position and general anesthesia was induced as well as placement of a nasogastric or orogastric tube and a Foley urinary catheter. Each patient was placed in flank position after general anesthesia. Retroperitoneal space was created by

balloon dilator. After an 11-mm optic trocar was inserted, a 10-mm port (dominant hand) and a 5-mm port were inserted under direct vision to become an equilateral triangle. Cold scissors were used for cyst decortication. A drain was sited in all patients and removed one day later.

Statistical Analysis

The patient's data were collected retrospectively. The Mann-Whitney U test was used for comparing the groups of patients. $P < 0.05$ was considered statistically significant. The Statistical Package for the Social Science (SPSS Inc, Chicago, Illinois, USA) version 12.0.1 was used.

Results

There was recurrent hematuria in 1 (3 %) case, hydronephrosis due to cyst compression in 5 (14.2 %) cases, flank pain in 29 (82.8 %) cases. The mean cyst diameter was 84.2 ± 17.2 mm (56-132 mm). Renal cysts were present on the right side in 20 (57.1 %) cases and on the left side in 15 (42.9 %) cases. Multiple renal cysts were observed in 7 (20 %) cases. Eleven (23.5 %) cysts were located in upper pole, 12 (25.5 %) in middle pole, 19 (40.4 %) in lower pole and 5 (10.6%) cysts were parapelvic. There were 14 cysts in the anterior, 8 cysts were in anteromedial, and 25 cysts were in the posterior of the kidney. The mean operation time was 40.1 ± 11.5 minutes. Four (11.4%) patients had previous surgery, 3 (8.5%) patients had percutaneous aspiration with sclerotherapy before. Mean operative time was 36.6 ± 8.3 minutes for primary cases and 54.2 ± 12 minutes for secondary cases. It was statistically longer in secondary cases ($p: 0.002$).

Blood transfusion was required in one (2.8%) patient. This patient had anemia and thrombocytopenia preoperatively. There was 180 cc hemorrhagic drainage and a decrease in hemoglobin value postoperatively so one unit of blood transfusion was performed. The recurrence was in only 1 (2.8%) patient and the cyst was smaller than before and asymptomatic.

Table 1. Summary of features of the patients

Gender (n, %)	
Male	18 (51.5 %)
Female	17 (48.5 %)
Side (n, %)	
Right	25 (53 %)
Left	22 (47 %)
Cyst diameter (mean \pm SD) (min-max) (mm)	84.2 \pm 17.2 (56-132)
Localization (n, %)	
Upper	11 (23.5 %)
Middle	12 (25.5 %)
Lower	19 (40.4 %)
Parapaelvic	5 (10.6 %)
Operation Indication (n, %)	
Pain	29 (82.8 %)
Urinary system obstruction	5 (14.2 %)
Recurrent hematuria	1 (3 %)

SD: Standard Deviation; min: minimum; max: maximum

Discussion

The incidence of simple renal cysts increases with age, and most are reported to be asymptomatic benign lesions [9]. In recent years, with the increasing use of diagnostic tools such as US and CT scan, the number of renal cysts diagnosed has

increased dramatically although most of them do not require treatment [10]. Pain, infection, and obstructive uropathy are the most common symptoms observed resulting from this compressive effect [11].

US-guided percutaneous aspiration and sclerotherapy is generally the primary option for treatment of simple renal cysts. Renal cysts mostly recur after percutaneous aspiration without sclerotherapy. It is a more effective treatment if it is done with sclerotherapy. Nevertheless, the recurrence rate in renal cysts that were treated with sclerotherapy is over 30 percent in the best series [12]. Ethanol (95%) is the most common sclerosing agent used for renal cysts [13] but the available data on its efficacy and adverse effects remains insufficient [14].

Prior to the introduction of the laparoscopic approach, US-guided percutaneous aspiration and sclerosing agents injection was the first option for the treatment of renal cysts [15]. Laparoscopic renal cyst decortication was first described by Hulbert and colleagues as a good alternative to open surgery [16]. Laparoscopic surgery can be performed with transperitoneal or retroperitoneal approach [17]. Almost all surgeries related to retroperitoneum are performed using retroperitoneoscopy. Some of these surgeries of this region are not popular because of long operation time and poor outcomes of reconstructive procedures in comparison with an open approach [18].

Retroperitoneoscopy is a fast procedure in the treatment of renal cysts, which has a high success rate and helps identify cysts very easily. Rassweiler and his colleagues reported 65 minutes (30-85) for the mean operation time and no complication for renal cyst resection using retroperitoneoscopy [19]. Retroperitoneoscopy has advantages over transperitoneoscopy such as less operative time, less analgesic requirement and early oral feeding [17]. Hamedanchi and his colleagues reported 45 minutes [20], Abbaszadeh et al. reported 58 (35-90) minutes [21], Erdem et al. reported 56.4 minutes (32-95) [22] for retroperitoneoscopic decortication of renal cysts. Ozcan et al. reported mean operative time for the transperitoneal approach as 51.5 min, and that for the retroperitoneal approach was 44.75 min. This difference was statistically significant between the two groups ($P < 0.05$) [23]. Our mean operative time was 40.1 ± 11.5 minutes and all the cases were discharged on postoperative day one. We performed more than one cyst resection in the same kidney in three (8.5%) cases.

We used cold scissors for cyst decortication in all patients and did not see any major complication. Monopolar energy devices and bipolar systems can be used for decortication. Rane et al. reported on 11 patients with simple renal cysts who underwent retroperitoneal laparoscopic decortication with conventional monopolar diathermy and reported only one major complication (ureteral fistula) [24]. McNally et al. used the Harmonic Scalpel (Ethicon, Cincinnati, Ohio) on seven patients with end-stage renal failure related to autosomal dominant polycystic kidney disease and reported blood transfusion in two patients and laparotomy requirement in one patient [25]. One of our cases also needed blood transfusion.

When we look at recurrence rates, retroperitoneoscopy is much better than percutaneous aspiration with/without sclerotherapy. The recurrence was only in one (3%) patient and the cyst was

smaller than before and asymptomatic. Erdem et al. reported 94.2% success rate in their study [22]. Ozcan et al. reported no clinical and radiological recurrence with retroperitoneal or transperitoneal approach in the laparoscopic treatment of Bosniac type I renal cysts [23].

Conclusion

Retroperitoneoscopic renal cyst decortication is a safe and fast procedure with the increasing use of laparoscopy. Some authors prefer transperitoneoscopy in large and upper pole cysts but we prefer retroperitoneoscopy for all renal cysts because of lower morbidity. Previous surgery was the factor for longer operation time in our study.

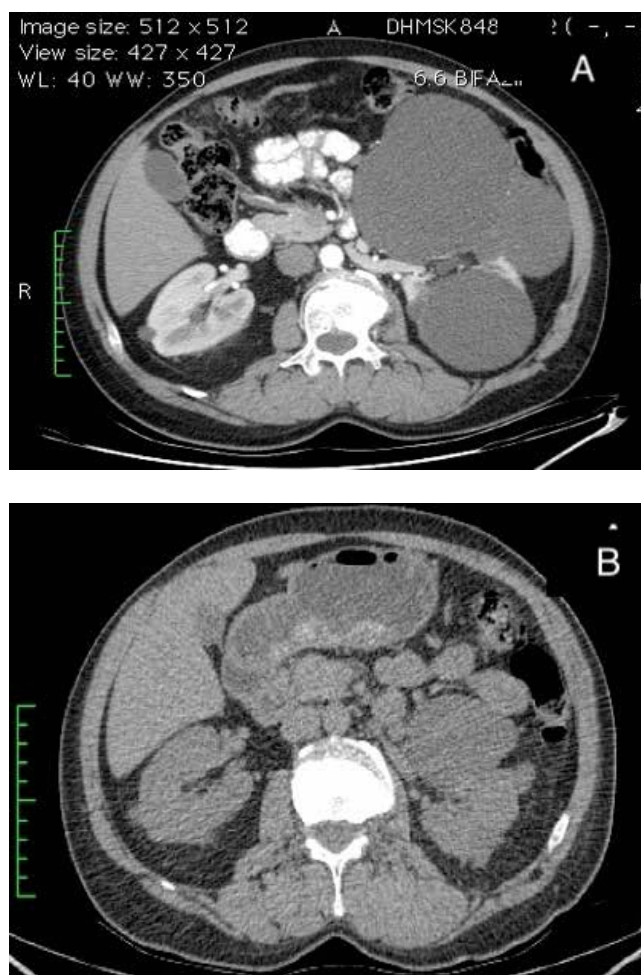


Figure 1. Preoperative (A) and postoperative (B) CT images of a patient.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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